



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/557,523	11/18/2005	Antonio Maria Guimaraes Leite Cruz	TS6386US	8808
23632	7590	12/27/2007		
SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 772522463			EXAMINER BOMAR, THOMAS S	
			ART UNIT 3676	PAPER NUMBER
			MAIL DATE 12/27/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/557,523

Applicant(s)CRUZ, ANTONIO MARIA
GUIMARAES LEITE**Examiner**

Shane Bomar

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/26/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: in line 13, the recitation of “and in addition to these shear cutters; and” should be rewritten as --and, in addition to these shear cutters,--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,823,892 to Fuller in view of US 3,269,470 to Kelly.

Regarding claim 1, Fuller teaches a rotary drill bit for drilling into a subterranean earth formation, the drill bit having a central longitudinal axis and being operable by applying a rotary motion about the axis, the drill bit comprising: a plurality of blades **11** protruding from the drill bit; a plurality of flow channels **12** stretching along the drill bit in a substantially radial direction whereby the successive flow channels are formed between two adjacent blades; shear cutters **15** which are provided in a row on or close to the leading edge of at least one of said blades with respect to the direction of rotary motion trailing adjacent to the flow channel that is associated with it, for running a fluid through and thereby removing cutting debris accumulating in front of the row of shear cutters; and in addition to these shear cutters; and axial cutters **16** which are located, with respect to the direction of rotary motion, in a trailing position with respect to said

row of shear cutters and its associated flow channel (Figs. 1 and 2). However, it is not expressly taught that the rotary bit is also a percussion drill bit.

Kelly teaches a rotary drill bit with drag-type cutters similar to that of Fuller. It is further taught that the rotary bit also functions as a percussion bit (col. 2, lines 38-49). Because both Fuller and Kelly teach methods for drilling holes in subterranean formation, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to substitute one method (i.e., rotary-percussive drilling) for the other (rotary drilling) to achieve the predictable result of drilling a in a subterranean formation.

Regarding claim 2: The axial cutters are provided ahead of the subsequent neighboring flow channel with respect to the direction of rotary motion (Figs. 1-2 of Fuller).

Regarding claim 3: The subsequent neighboring flow channel is associated with a second row of shear cutters provided on the leading edge of the subsequent blade to the said at least one blade (Figs. 1-2 of Fuller).

Regarding claim 4: The axial cutters are located on the same blade as the shear cutters (Figs. 1-2 of Fuller).

Regarding claim 5: The axial cutters comprise dome shaped or essentially hemispherical shaped cutting surfaces (Fig. 3 of Fuller).

Regarding claims 6 and 7: The axial cutters are formed essentially of tungsten carbide and have a layer of diamonds (Fig. 3; col. 4, lines 24-32 of Fuller).

Regarding claims 8 and 9: When only considering the single row of three shear cutters 15, but also considering the two rows of axial cutters 16 that rotationally trail said row of shear

cutters, then the ratio of axial cutters to shear cutters is 3:2 (Fig. 1 of Fuller wherein there are twice as many axial cutters when considered in this fashion).

Regarding claim 10: The shear cutters 15 of one row are positioned at mutually different positions than shear cutters on another row (Figs. 1-2 of Fuller).

Regarding claims 11 and 12: As the shear cutters 15 are located across the domed face of the bit, at least of the shear cutters will have a rake surface at a back-rake angle of less than 90 degrees, and the flat impact surface of at least one shear cutter will be essentially parallel to the plane perpendicular to the longitudinal axis (Figs. 1 and 2 of Fuller).

Regarding claims 13-20: The combination of Fuller and Kelly provides a drill bit with the blade, flow channels, shear cutters, and axial cutters as shown in the rejections of claims 1-12, wherein Kelly provides the further added ability of driving the drill bit in a longitudinal reciprocal motion for percussive force.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/557404 and claims 1-20 of copending Application No. 10/559909. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims contain essential the same subject matter written in various scope and terminology.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

It is noted that this is a repeat of the rejection previously presented that was not addressed by the Applicant.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 13, and 14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shane Bomar whose telephone number is 571-272-7026. The examiner can normally be reached on Monday - Thursday from 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (In USA or Canada) or 571-272-1000.

/Shane Bomar/
Patent Examiner
Art Unit 3676

December 20, 2007